MTH 140 TECHNICAL MATHEMATICS I (revised 11/16/2015)

The purpose of this course is to develop an intuitive feeling for mathematical methods without emphasizing mathematical rigor. The student will be expected to use algebra, trigonometry, and statistics to solve practical problems from various technologies. A comprehensive departmental final exam testing the degree of mastery of the following course objectives is required.

1. General objectives
    - 1.1 Review converting numbers from decimal notation to scientific notation and vice versa.
    - 1.2 Review performing arithmetic operations using scientific notation.
2. Approximate Numbers and Measurements
    - 2.1 Review performing arithmetic operations on approximate numbers and expressing the results in the proper accuracy or precision format.
    - 2.2 Review making reductions (changes) to units of measurement within the customary system and reductions to units of measurement within the metric system.
    - 2.3 Review making conversions between the customary and metric systems of measurement.
    - 2.4 Review applying the algebra of dimensional analysis to geometric problem solving.
    - 2.5 Review expressing measurements as a ratio in proper form.
3. Equation Solving
    - 3.1 Review solving linear equations in one variable.
    - 3.2 Review solving literal equations and formulas for a specified variable.
    - 3.3 Review solving problems involving ratio and proportion.
    - 3.4 Review solving problems involving direct, inverse, and/or joint variation.
4. Functions
    - 4.1 Define a function.
    - 4.2 Find the domain of a function algebraically.
    - 4.3 Find the domain and range of a function from its graph.
    - 4.4 Evaluate functions using function notation
    - 4.5 Given a one-to-one function f(x), find the inverse function $f^{-1}(x)$.
    - 4.6 Graph functions using a table of values.
    - 4.7 Determine the asymptotes (if any) of basic rational and radical functions graphically.
5. Trigonometry
    - 5.1 Convert an angle measurement in radians or degrees to an equivalent measurement.
    - 5.2 Evaluate trigonometric functions for any angle.
    - 5.3 Review solving applications involving right triangles.
    - 5.4 Solve vector problems using components.
    - 5.5 Determine the amplitude, period, and displacement and sketch the graphs of the sine, cosine, and tangent functions.
    - 5.6 Use the following identities in applications: sum & difference of two angles for sine and cosine, double angle for sine and cosine, and Pythagorean.
    - 5.7 Prove identities involving the trigonometric functions.
    - 5.8 Evaluate inverse trigonometric expressions and functions.
    - 5.9 Solve first degree equations involving trigonometric and inverse trigonometric functions.
    - 5.10 Solve factorable second degree equations involving trigonometric functions.
6. Statistics
    - 6.1 Determine the mean, median, mode, and standard deviation for a set of data.